

PROPOSED VALIDATION OF *PSYLLA* GEOFFROY, 1762, AND SUPPRESSION OF *CHERMES* LINNAEUS, 1758, UNDER THE PLENARY POWERS (INSECTA, HEMIPTERA). Z.N.(S.) 1515

By V. F. Eastop (*British Museum (Natural History), London*)

For many years there has been considerable confusion between the names *Psylla* Geoffroy, 1762, *Chermes* Linnaeus, 1758, and *Adelges* Vallot, 1836. Family names have been derived from all three generic names and *Chermes* itself has been used in five different ways in four different families of Homoptera. In the following account the anglicised word "psyllids" is used for the jumping plant lice known as Psyllidae (or sometimes Chermidae); "adelgids" for the family of Aphidoidea known as Adelgidae (or sometimes Chermidae); "aphids" for Aphididae in a broad enough sense to include *Eriosoma* but to exclude Phylloxeridae and Adelgidae; and "coccids" for Coccoidea. The name *Chermes* has been used both for Coccoidea and Aphididae in addition to its better known uses for Adelgidae and Psyllidae.

2. Linnaeus (1758, *Syst. Nat.* (ed. 10) 1 : 453-455) proposed the name *Chermes* for fourteen species, nine of which are currently accepted as psyllids, one as an aphid and one as an adelgid. The other three have been referred to as psyllids by some authors but this has been disputed by others so that the names are usually now regarded as nomina dubia. The three species included by Linnaeus and subsequently selected as types of the genus are the psyllids *Chermes alni* (: 454) and *Chermes ficus* (: 455), now usually called *Psylla alni* (L.) and *Homotoma ficus* (L.) respectively, and the adelgid *Chermes abietis* now usually called *Sacchiphantes* or *Adelges abietis* (L.).

3. Geoffroy, 1762 (*Hist. abrég. Ins. Paris* : 482) replaced Linnaeus' generic concept of *Chermes* with *Psylla* because the name *Chermes* is apparently derived from an Arabic word also in use in France at that time for a coccid or its products; placed *Chermes* Linnaeus as a synonym of *Psylla*; and used *Chermes* to replace *Coccus* Linnaeus. The reason for the replacement of *Chermes* Linnaeus by *Psylla* is set out on pages 498-499 under *Chermes*. *Psylla* Geoffroy, 1762, was invalidated when Geoffroy's work was rejected for nomenclatural purposes by the International Commission on Zoological Nomenclature in Opinion 288, 1954.

4. Scopoli (1763, *Ent. Carn.* : 139), Fabricius (1775, *Syst. Ent.* : 740; 1794, *Ent. syst.* : 221 and 1803, *Syst. Rhynch.* : 303); Goeze (1778, *Ent. Beytrage* : 318), Schneider (1785, *Nomen. ent.* : 32) followed Linnaeus in using *Chermes* for psyllids. Schrank (1781, *Enum. Ins. Aust. Indig.* : 294) and 1801 (*Fauna Boica* : 47, 140) also used *Chermes* for psyllids but his *Chermes abietis* is probably a psyllid and not an adelgid. The later authors such as Goeze (1778) listed *Psylla* Geoffroy as a synonym of *Chermes* Linnaeus. Vallot (1792, *Concord. Syst. Reaumur* : 97) used *Chermes* for the genus with the common name La Psylle and Kermes for the common name of the genus *Coccus* Linnaeus.

5. De Geer (1783, *Gen. Spec. Ins.* : 78) recognised the aphidoid nature of *Chermes abietis* Linnaeus, placing it in *Aphis* and restricting the name *Chermes* to the psyllids he knew.

6. Olivier (1798, *Ency. Meth.* 1 : introduction, p. 24) described *Psylla* (sic) Geoffroy (= *Chermes* Linn., Fabr.) as insects with leaping legs but listed no species. Latreille (1796, *Précis. Char. gen. Ins.* : 93) described *Psylla* Geoffroy, placed *Chermes* Linnaeus as a synonym and used *Chermes* for coccids.

7. Lamarck (1801, *Syst. Anim. s. Vertèbr.* : 298) cited *Chermes ficus* Linnaeus as an example of *Psylla*. This citation is not available as a type-designation but helps to explain later confusion, as it was accepted as a type citation by some authors.

8. Latreille ([1802-1803], *Hist. nat. gén. partic. Crust. Ins.* 3 : 266-267) established a genus *Psylla* without reference to Geoffroy, for two species, *Chermes alni* Linnaeus, 1758, and *Chermes ficus* Linnaeus, 1758, and in 1810 (*Consid. gén. Crust. Arachn. Ins.* : 434) designated *Chermes alni* Linnaeus, 1758, as the type of the genus *Psylla*. It is in this sense that most later authors have used the name *Psylla*. In 1807 (*Gen. Crust. Ins.* 3 : 168) Latreille used the family-group name Psyllidae. Latreille, 1817 (*in* Cuvier, *Règne Anim.* 3 : 409) made it clear that his *Psylla* is an alternative name for *Chermes* referring to the group as "Des Psylles (*Psylla*) de Geoffroi ou celui des *Chermes* de Linnaeus".

9. Fallén (1814, *Spec. nov. Hemipt. Disp. Meth.* : 22) used a family-group name Chermides for psyllids.

10. Leach, 1815 (*Edinburgh Ency.* 9 : 125) used *Psylla* (with *Chermes* as a synonym) for psyllids; in 1819, Samouelle (*Entom. usef. Comp.* : 231) used Psyllidae and *Psylla* for psyllids and in 1829 (*Syst. Cat. Brit. Ins.* : 361) used a genus *Psylla* and (: 362) included *Chermes abietis* Linnaeus in *Psylla*.

11. Boitard, 1828 (*Man. d'ent.* : 165) used *Psylla* for psyllids and a genus *Kermes* for coccids.

12. Stephens (1829, *Nomencl. brit. Ins.* : 67) used Psyllidae and *Psylla*, included *abietis* Linnaeus in *Psylla* and listed an aphid under the name *Eriosoma abietis* Stephens. Some later authors placed *Chermes abietis* Linnaeus in the aphid genus *Eriosoma*.

13. Cuvier (1832, *Règne Anim.* 2 : 264-267) used the Latreille concept of *Chermes* and *Psylla*. Latreille was responsible for the entomological part of earlier Cuvier publications (see no. 8 above).

14. In 1834, 1835 and 1836 Curtis (*Brit. Ent.* : 492, 565, 625) used the family-group name Psyllidae for psyllids.

15. Burmeister ([1834-1835], *Handb. Ent.* 2 : 88) used *Chermes* for gall-forming insects including both *Chermes abietis* Linnaeus and some true aphids and (on page 95) used the group name Psyllodes and genus *Psylla* for psyllids.

16. Vallot, 1836 (*C. R. Acad. Sci.*, Paris 3 : 72) described a new genus and species *Adelges laricis* and (p. 73) a new psyllid, *Psylla coffeae* (sic).

17. Haliday, 1839 (*Ann. Mag. nat. Hist.* 2 : 190) used *Adelges* for the two adelgids he knew.

18. Hartig, 1839 (*Jahr. Forst. Forst. Nat.* 1836/1837 : 622) and 1841 (*Zeit. f.*

Ent. 3 : 366) used *Chermes* for adelgids only. This usage was followed by Kaltenbach (1843, *Mon. Fam. Pflanzenläuse* : 193) and Koch (1857, *Die Pflanzenläuse*, Aphiden : 314). Buckton (1882, *Mon. Brit. Aphid.* 4 : 19) used a sub-family name Chermesinae for adelgids, as did Cholodkovsky (1888–1915) and Börner (1904–1913) in numerous papers on the group.

19. Westwood (1840, *Introd. mod. Classif. Ins.* 2 : 435–437) used Psyllidae and *Psylla* for psyllids and (: 442) placed *abietis* Linnaeus in the aphid genus *Eriosoma* Samouelle, 1819 (*Ent. usef. Comp.* : 232), and in a footnote on page 441 says, "I do not know the genus *Adelges* Vallot". At the end of the same work in his Synopsis Gen. Brit. Ins. : 117, Westwood cited *Chermes pyri* Linnaeus as the type-species of *Psylla*. In 1843 (*Arcana Entom.* 2 : 63, footnote), Westwood used *Adelges* Vallot for adelgids.

20. Amyot & Serville, 1843 (*Hist. nat. Ins. Hémipt.*) used Psyllides for psyllids (: 590) with *Psylla* Geoffroy (: 591); and *Chermes* Geoffroy for coccids.

21. Curtis, 1844 (*Gardener's Chronicle* 1844 : 83) established the genus *Sacchiphantes* with the adelgid *Chermes abietis* Linnaeus, 1758, as the type.

22. Blanchard, 1845 (*Hist. Ins.* 2 : 415) used *Chermes* for adelgids and *Psylla* for psyllids.

23. Hardy, 1850 (*Ann. Mag. nat. Hist.* 6 : 187) used *Adelges abietis* for this adelgid.

24. Walker, 1852 (*List. Homopt. Ins. Brit. Mus.* : 909) used Psyllidae for psyllids and *Adelges* for adelgids.

25. Passerini, 1860 (*Gli Afidi* : 30) selected *Chermes abietis* Linnaeus as the type of *Chermes* Linnaeus, 1758, presumably to regularize the usage of Hartig (1839) and followers (listed in 18 above).

26. Frauenfeld, 1868 (*Verh. Zool.-Bot. Ges. Wien* 18 : 896–897) discussed the application of the name *Chermes*.

27. Maskell, 1884 (*N.Z. J. Sci.* 2 : 292) and 1885 (*Trans. N.Z. Inst.* 17 : 19) regarded *Chermes* and *Kermes* as the same name and used *Kermes* for coccids erecting a new name for adelgids, *Kermaphis*. He only included one species *Kermaphis pini* Koch var. *laevis* which apparently comes in the genus *Pineus* and *Kermaphis* Maskell, 1884, is thus a synonym of *Pineus* Shimer, 1869.

28. Lichtenstein, 1885 (*Mon. Aphid.* : 162) used Chermesiens as a group name to include both adelgids and those species of true aphids he knew which held the wings flat on the back in repose, but he used the generic name *Adelges* Vallot for these insects, rejecting *Chermes* Linnaeus, 1758, on the grounds that Linnaeus described *Chermes* as jumping insects.

29. Kirkaldy, 1904 (*Entom. Lond.* 37 : 255) accepted Lamarek's 1801 example (*Chermes ficus* Linnaeus) of *Chermes* Linnaeus, as being a type citation and used the genus *Chermes* and the family-group name Chermidae for the psyllids.

30. Van Duzee, 1917 (*Cat. Hemipt. Amer. north of Mexico, Univ. Calif. Techn. Bull. Coll. Agric.* 2 : 782) who was the chief proponent of the "logical school" used Chermidae in place of Psyllidae. Van Duzee believed that since Linnaeus described mainly psyllids and because his generic definition of *Chermes* applied to psyllids and excluded aphids and adelgids, the fact that Linnaeus included a species not a psyllid (which was later selected as a type-

species), should not be allowed to alter the use of the name *Chermes* from the sense in which Linnaeus used it. This argument is set out in detail by Van Duzee (1930, *Pan-Pacific Ent.* 7 : 96, editorial).

31. Baker, 1920 (*Bull. U.S. Dept. Agric.* 826 : 2) supported Van Duzee's conclusions with a legally acceptable argument. This was that since Geoffroy's name *Psylla* was only a replacement name for *Chermes* Linnaeus the rules applying to the type-species of replacement genera must be applied, which automatically makes the type of *Psylla* the type of *Chermes* and thus *Psylla* Geoffroy becomes a synonym of *Chermes* Linnaeus. Since Lamarck's 1801 example is not acceptable as a type citation, Latreille's 1810 type-designation of *Chermes alni* Linnaeus becomes the type-species of both genera. This argument is supported and set out in detail by Laing (1951, *Ent. mon. Mag.* 87 : 23-27) using the Latreille type citation.

32. Annand, 1924 (*Pan-Pacific Ent.* 1 : 79-82) accepted the psyllid use of *Chermes* Linnaeus and used *Adelges* Vallot for adelgids.

33. Annand, 1928 (*Stan. Univ. Publ. Biol. Sci.* 6 : 31) used a subfamily name Adelginae for the adelgids. The earlier authors had placed adelgids in various groups and by the time their aphidoid position was established the group was known as the Chermidae and usually placed as a subfamily of Phylloxeridae.

34. Börner, 1932 (*Handb. Pflanzenkrankheiten* 5(2) : 674, 692) rejected *Chermes* as an adelgid genus, placing "*Chermes* Passerini nec Linnaeus" as a synonym of *Sacchiphantes* Curtis, 1844, and referring to the group as the Adelgiden. In 1952 Börner (*Europae centralis Aphides* : 203, 208) maintained this view.

35. Caldwell, 1944 (*J. New York ent. Soc.* 52 : 335, footnote) stated that *Chermes alni* Linnaeus, 1758 (the type-species of *Psylla* Latreille, [1802-1803]) was the same insect as *Prociphilus tessellatus* (Fitch), a true aphid. If true this would mean that the name *Chermes* Linnaeus would have to be used in the Aphididae for the genus *Prociphilus* Koch, 1857 (*Die Pflanzenläuse Aphiden* : 2). This use of the already nomenclaturally perplexing name *Chermes* would be particularly confusing as it would affect the subfamily (family in the case of modern authors) name of this group. Linnaeus gave four references under his species *alni* in 1758, one of which was to an American account of what was assumed to be this psyllid but which was subsequently shown to be the aphid *Prociphilus tessellatus* (Fitch). There is no evidence that Linnaeus ever saw this American material and no reason to select this particular reference as a definition of *Chermes alni* Linnaeus.

36. A detailed account of the problem of *Chermes* versus *Psylla* was given by Laing, 1951 (*Ent. mon. Mag.* 87 : 23-27). He used *Chermes* Linnaeus to replace *Psylla* Geoffroy with *Psyllia* Kirkaldy, 1905 (*Wien ent. Ztg.* 24 : 266) as a synonym ; regarded *Chermes* Geoffroy, 1762, as a distinct but preoccupied name ; recognised an adelgid genus *Sacchiphantes* Curtis, 1844, type-species *Chermes abietis* Linnaeus, 1758, with *Chermes* (L.) Passerini, 1860, as an objective synonym ; and recognised an adelgid genus *Pineus* Shimer, 1869, with *Chermaphis* Maskell, 1884, as a subjective synonym.

37. The generic name *Chermes* Linnaeus, 1758, and the derived family-

group name Chermidae Fallén, 1814, are not in current use by specialists for their own group, although some specialists apply the name to groups on which they are not working. Adelgid specialists do not recognise Passerini's type citation by which some psyllid specialists apply *Chermes* and Chermidae to *Sacchiphantes* Curtis, 1844, and Adelgidae respectively. Aphid specialists tend to accept the replacement name argument put forward by Baker, 1920 (see 31 above), whereby *Chermes* and Chermidae are applied to *Psylla* and Psyllidae respectively. *Chermes* Linnaeus has not been used in Coccoidea for many years but its sense is taken by *Kermes* Boitard, 1828. The suggested replacement of *Prociphilus* Koch, 1857, by *Chermes* Linnaeus has been (properly) ignored by specialists.

38. *Chermes* Linnaeus, 1758, has been used in five different ways and the derived family name Chermidae in four different ways.

- (1) *Chermes* L. to replace *Psylla* Latreille, type-species *Chermes alni* Linnaeus and Chermidae to replace Psyllidae.
- (2) *Chermes* L. to replace *Homotoma* Guérin (type-species *Chermes ficus* Linnaeus) and Chermidae to replace Psyllidae and *Psylla* replaced by *Psyllia* Kirkaldy, 1905.
- (3) *Chermes* L. to replace *Sacchiphantes* Curtis, 1844 (type *Chermes abietis* Linnaeus) and Chermidae to replace Adelgidae.
- (4) *Chermes* L. to replace *Prociphilus* Koch and Chermidae (or Chermidae) to replace Eriosomatinae (or Eriosomatidae).
- (5) *Chermes* L. in Coccoidea, a usage of no nomenclatural standing but based on the derivation of the word.

The fifth of the above alternatives is unacceptable by any sense of the word and the fourth has only been mentioned by one author other than the proposer and he (Laing, *Ent. mon. Mag.* 87 : 51) summarily dismissed it. The second alternative is not acceptable by the rules, being based on an invalid type citation. Only the first and third alternative have had any recent support. The adoption of any of these alternatives would cause considerable nomenclatural confusion including the change of an accepted family name.

39. To avoid this confusion the International Commission on Zoological Nomenclature is requested to take the following action :

- (1) to use its plenary powers :
 - (a) to validate the generic name *Psylla* Geoffroy, 1762, as allowed by Opinion 228, and to designate *Chermes alni* Linnaeus, 1758, as type-species of that genus ;
 - (b) to suppress the generic name *Chermes* Linnaeus, 1758, for the purposes of the Law of Priority but not for those of the Law of Homonymy ;
- (2) to place the following generic names on the Official List of Generic Names in Zoology :
 - (a) *Psylla* Geoffroy, 1762 (gender : feminine), type-species, by designation under the plenary powers in (1) above, *Chermes alni* Linnaeus, 1758 ;
 - (b) *Adelges* Vallot, 1836 (gender : masculine) type-species, by monotypy, *Adelges laricis* Vallot, 1836 ;

- (3) to place the following specific names on the Official List of Specific Names in Zoology :
- (a) *alni* Linnaeus, 1758, as published in the binomen *Chermes alni* (type-species of *Psylla* Geoffroy, 1762) ;
 - (b) *laricis* Vallot, 1836, as published in the binomen *Adelges laricis* (type-species of *Adelges* Vallot, 1836) ;
- (4) to place the following family-group names on the Official List of Family-Group Names in Zoology :
- (a) PSYLLIDAE Latreille, 1807 (type-genus *Psylla* Geoffroy, 1762) ;
 - (b) ADELGINAE Annand, 1928 (type-genus *Adelges* Vallot, 1836) ;
- (5) to place the generic name *Chermes* Linnaeus, 1758 (as suppressed under the plenary powers in (1)(b) above) on the Official Index of Rejected and Invalid Generic Names in Zoology ;
- (6) to place the family-group name CHERMIDES Fallén, 1814 (type-genus *Chermes* Linnaeus, 1758) (invalid because the name of its type-genus has been suppressed under the plenary powers) on the Official Index of Rejected and Invalid Family-Group Names in Zoology.